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ABSTRACT

The study evaluated the validity, reliability, and effectiveness in providing needed information of the Montana Functional Vision Assessment (MFVA) Instrument by comparing it with the Texas Education Agency Functional Vision Assessment and field testing the instrument in evaluations of nine multihandicapped students (ages 3-11). Evaluation led to the conclusion that the MFVA is a valid, reliable, and useful instrument for professionals working with young multihandicapped and visually impaired children. Includes 37 references. (DB)

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A STUDY TO EVALUATE THE EFFECTIVENESS OF THE MONTANA FUNCTIONAL VISION ASSESSMENT FOR MULTIHANDICAPPED PERSONS

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INTRODUCTION

Across the United States a special population of children requires a unique special education program. This group is the visually impaired children in the public schools. The percent of multihandicapped students that are visually impaired as part of their disability is estimated to be 75-85% (Johnson et.al 1983 and Cress et. al 1982).

Multihandicapped children are difficult to assess for vision due to poor reliability of vision tests for that population (Johnson et al,1983). Cress et al (1982) reported that 90% of the multihandicapped children were untestable in school vision screening tests. Buutljens and Aitken (1987) surveyed opthalmalogists and concluded that there was an inadequacy of vision assessment tools for children with multiple impairments. Buutljens and Aitken (1987) also reported that teachers of visually impaired persons gave the highest ratings of confidence to vision tests consisting of structured measures of functional vision (Buutljens and Aitken, 1987). Lewis (1988) recommended that functional vision tests be utilized to assess how multihandicapped students use their vision as the results are more pertinent to the prescription of educational programs.

The Montana Functional Vision Assessment (MFVA) was developed by a special education teacher. It was designed to serve as an instrument to enable special educators to have

information about the range of visual ability so that more appropriate education can be implemented for these children.

Statement of the Problem

This research proposes to analyze the Montana Fuunctional Vision Assessment (MFVA) by comparing it with the Texas Education Agency Functional Vision Assessment and field testing the instrument by evaluating students in the public schools.

The subproblems that will be assessed are as follows:

1) Is the MFVA valid?

2) How reliable is the MFVA?

3) How effective is the MFVA in providing information to educators and other clinicians on needs of low vision multihandicapped students?

Definition of terms

Functional vision assessment. This is an assessment of how a child uses vision that he or she possesses. It is a progressive developmental assessment of how residual vision is used in a variety of tasks. The test doesn't analyze visual acuity or the ability to see detail. It is not an examination of the eye or the student's disorder.

Importance of the Study

Information of the extent of visual impairment is often lacking especially for students in preschool and early elementary school. This assessment will provide information

for the development of educational goals for professionals in a multi-disciplinary team.

The MFVA collates information for the educator or allied health professional on how a student sees the world and moves in relation to the student's perception. In language development, the test provides information on the student's ability to see others who are communicating in nonverbal ways. Several features, such as objects, concepts of names, and function of objects are frequently visual in self help and social situations. Educational goals that involve symbols such as writing and reading are primarily visual and an analysis of these symbols, such as reading and writing, in the child's visual field is of utmost importance. A functional vision assessment will provide valuable vision use information for a wide range of professionals working with visually impaired children.

Existing Functional Vision Assessments

Seven different vision assessments were found in the literature. The information gathered by these assessments wasw not useful for a majority of multihandicapped clients because many of them fail to reach the level of independent performance required by the instrument.

Two of the vision assessment instruments reviewed were designed for deaf-blind persons (Stillman, 1978; Sailor, 1980). They were devised to meet the needs of children that were also hearing impaired. Many of the strategies and the

information found in these tools were very applicable to the deaf-blind population. The data collected on visual response and visual motor abilities were especially useful for educators. Buutijens and Aitken (1987) administered test items from standardized vision tests to students with or without vision impairments but practical information was not provided for multihandicapped clients.

Lewis (1988) demonstrated a functional vision assessment organized around the concept of three general areas: visual response skills, visual motor abilities, and visual perception skills. Emerging skills in children were added with reference to visual developmental scales. The organization described by Lewis was the basis for the development of the functional vision assessment in this study.

METHODOLOGY

Organization of MFVA

The MFVA is designed in sequences just as normal visual development occurs in children. The instrument is broken into three domains of visual development: visual response skills, visual motor skills and visual perceptual skills.

Visual response domain. The visual response domain consists of six tasks that are found in the normal visual development of newborn to two month-old infants. Two of these tasks are reflexive, the pupilary reflex and eye blink reflex. The domain also consists of observable

objective movements of the eyes in response to visual stimuli provided by the examiner.

Visual motor domain. The second phase of the functional vision assessment consists of eleven visual tasks that show the integration of the eye muscles and neurological systems (Lewis, 1988). The MFVA evaluates the child's ability to localize, track, scan and converge/diverge by holding puppets, small squeeze toys, or penlights within the child's range of vision. Items are moved slowly from left to right, up and down, in and out, and in oblique angles. The evaluator notes whether the child locates an object efficiently and attends for at least 5 seconds.

Visual perceptual domain. The third section of the test uses visual perception skills or how the child processes the visual information and responds to the tasks (Lewis, 1988). The visual perceptual domain consists of sixteen tasks that measure how the child uses his vision to solve problems or complete motor tasks.

Conclusions and recommendations. The final section of the test is a summary of the student's performance, the examiner's conclusions and recommendations. Recommendations comprise instructional strategies and techniques that could be useful to the unique needs of the student.

Validity

The MFVA was analyzed to determine the validity of the instrument by 1) comparing it to the Functional Vision

Evaluation from the Texas Education Agency (FVE), 2) field testing it using nine multihandicapped children across Montana, and 3) content validity as supported by statements of validity by three authorities in the field of vision assessment.

Comparison. The MFVA was evaluated by comparing it to the FVE (1984). The FVE was chosen because of the instrument's application to the multihandicapped population. Both the FVE and the MFVA were given to two students and the results were compared. Due to the nonstandard nature of functional vision assessments, a comparison was made based upon the student's placement on a visual developmental scale (Bayley, 1969).

Field test. The MFVA was given to nine children, two boys and six girls, who are multihandicapped and visually impaired. The information gathered was shared with parents, educators, and other clinicians who work with the children.

Content validity. Validity was measured using content validity. A panel of three authorities in the field of vision assessment were selected and asked to review the MFVA. They each provided a statement that the MFVA did, in their professional opinion, measure functional vision in young multihandicapped persons.

Reliability

Reliability was established using test-retest reliability. Two students from the field test were selected

for the test/ retest. They were given the MFVA twice, approximately seven to ten days apart.

Effectiveness

A survey was developed to determine the effectiveness of the MFVA in providing useful or practical information to educators and other clinicians on the needs of low vision multihandicapped students.

RESULTS

Comparison The MFVA was evaluated by assessing two students with both the MFVA and the Functional Vision Evaluation by the Texas Education Agency (FVE) (Texas Education Agency, 1984) and comparing the results. Visual developmental scales were used to compare the results. GD scored thirty-six to forty months on the visual developmental scale for both the MFVA and the FVE. Likewise, WS scored three to four months on the visual developmental scale using information from the FVE and MFVA. These findings support the assumption that the MFVA and FVE produce similar results.

Field test The MFVA was field tested with nine children who are multihandicapped and visually impaired. Four of the students were identified as multihandicapped and four students, under six years of age, were classified non-categorical. This is an appropriate classification for young multihandicapped students. All nine students were multihandicapped as defined in this study.

Students were placed on a visual developmental scale from three to sixty months. Functional uses of the MFVA for individual students were included in the report to the Child Study Team for each student.

TABLE 4: SUMMARY OF FIELD TEST RESULTS

Student	Age	Handicapping Condition	Visual Developmental Level (in months)	Number of Items Attempted on MFVA (Total=38)
MM	3	NC	12 months	24
KA *	5	NC	3-4 months	14
JA	5	NC	8-10 months	31
DK	6	NC	3-4 months	13
GD **	6	MH	36-40 months	34
MK	7	MH	5-6 months	31
WS **	9	MH	3-4 months	14
SH	10	MH	48-60 months	38
VC *	11	MH	5-12 months	20

*Reliability subjects **Validity subjects
NC- Noncategorical MH-Multihandicapped

Content validity Validity was measured using content validity. A panel of three authorities in the field of vision assessment were selected and asked to review the MFVA. All three of the authorities in visual assessment returned statements of the appropriateness of the MFVA to measure the educational needs for multihandicapped/ visually impaired students.

How reliable is the MFVA?

The second subproblem was to determine the reliability of the MFVA. Reliability was established using test-retest reliability. The two students selected for test-retest were tested approximately seventeen days later with the MFVA. Student KA had similar results for all 13 items or a reliability of 1.0 for test/retest with the MFVA . The second student, VC, had the same results for 22 of 23 items or a reliability of .96.

How effective is the MFVA in providing information on the needs of low vision multihandicapped students?

The final subproblem was to determine the effectiveness of the MFVA in providing information to educators and other clinicians on the needs of low vision multihandicapped students. A survey was developed and distributed to child study team members that received information from the MFVA. Twelve surveys were sent out and eight surveys were returned. Six were from special educators, one from a vision consultant, and one from a physical therapist.

The compiled survey results (Table 5) showed that on a Likert scale of 1 (not at all useful) to 6 (very useful), respondents gave an average of 5.4 for practical nature of the MFVA. The respondents averaged 5.2 for confidence in the accuracy of the MFVA, where 1 was no confidence in the results and 6 was highly confident. An average of 5.6 was found on the 1 (not recommended) to 6 (highly recommended) scale for the willingness to recommend the MFVA for other visually impaired children.

TABLE 5: SUMMARY OF PERTINENT SURVEY RESULTS
n=8

Question	Range	Mean	Mode
1. Practical nature of information from MFVA	4-6	5.4	6
4. Level of confidence in accuracy of results.	3-6	5.2	6
6. Willingness to recommend MFVA for other visually-impaired children	5-6	5.6	6

The results of the survey indicated that recommendations were the most useful area of the MFVA. Seven out of eight persons in the survey reported that they had other sources of information regarding the child's vision functioning. Six of eight persons reported they changed their teaching strategies after receiving the results of the MFVA.

This survey indicates that the instrument was effective in providing useful or practical information for child study team members.

CONCLUSIONS

The MFVA is very appropriate for the population of young multihandicapped persons. The MFVA fills a specific need that is not being met by current functional vision assessments. The review of literature showed that very few instruments are appropriate for multihandicapped visually impaired persons. Those currently in practice are not held in high confidence by professionals in the field (Buultjens and Aitken, 1987).

Further study in this area might include analysis of the instrument with persons fourteen years old and older who are multihandicapped.

This would entail modification of some of the test items and use of more age appropriate materials.

A further recommendation is that a one-year followup of the students in the field study be completed to determine the following: 1) Were recommendations from the MFVA implemented? 2) Is improvement seen in student's visual development? 3) Are the assessment results still accurate and useful to professionals working with visually impaired multihandicapped students?

The analysis of the MFVA has provide evidence that it is a valid, reliable, and useful instrument for professionals working with young multihandicapped and visually impaired children. Thus, a final recommendation is that the MFVA be used more extensively in the assessment of multihandicapped children as they progress through school so that teaching strategies can be implemented that stimulate vision development and maximize student use of residual vision.

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